Journal of Surgical Oncology 63:191–194 (1996)

Incidence of Recurrent Bladder Cancer in Patients Requiring Admission for Abdominal Pain Long After Cystectomy

JOHN L. PHILLIPS, MD, AND RONALD R. SALEM, MD
From the Department of Surgery (R.R.S.) and Section of Urology (J.L.P.), Yale University School of Medicine, Yale-New Haven Hospital, New Haven, Connecticut

Background: Malignant disease is often considered in the workup of the acute abdomen, especially when there is a history of intra-abdominal, neoplastic disease. The treatment of bladder cancer frequently involves intra-abdominal procedures, but the incidence of recurrent bladder cancer as the cause of an acute abdomen is unknown.
Methods: In a retrospective, 13-year study, the cause of abdominal pain in 29 patients with a history of surgery for bladder cancer was reviewed. Evaluations included analysis of all clinical, laboratory, radiologic, and pathologic data prior to and during hospitalization, where available.
Results: Fourteen of 18 patients 38.9 ± 10.8 months after cystectomy and 10 of 11 patients 18.9 ± 10.8 months after noncystectomy procedures had recurrent bladder cancer. Computed tomography, when used, identified all cases of recurrent cancer prior to exploratory surgery.
Conclusion: Abdominal pain requiring admission in patients with a remote history of cystectomy for bladder cancer is likely due to recurrent disease.

KEY WORDS: **bladder cancer, cystectomy, acute abdominal pain, small bowel obstruction, exploratory laparotomy**

INTRODUCTION

Bladder cancer is unique in that it is an extra-abdominal malignancy whose treatment often includes a cystectomy and the creation of urinary conduits or reservoirs made from intestine. The evaluation of surgical abdominal pain in patients with a history of major abdominal surgery for bladder cancer must therefore differentiate recurrent from nonrecurrent, intestinal disease.

Neoplastic causes for an acute abdomen in those without a prior history range from 1.9% to 13.2%, the reported incidences rising with age, co-morbidity, and risk factors [1–5]. In patients with a surgical history of intestinal cancer, however, up to 25% may eventually develop intestinal obstruction alone secondary to recurrent, neoplastic disease [6]. This compares to a 2.9% 5-year incidence of bowel obstruction following staging laparotomy for Hodgkin's lymphoma in which intestinal continuity is not interrupted [7]. Primary bladder cancer rarely presents with abdominal pain and accounts for just 4.7% of malignancies causing an acute abdomen [1,8,9].

It has not been reported, however, how frequently recurrent bladder cancer causes abdominal complaints and/or intestinal obstruction requiring admission and reoperation.

We reviewed the medical records of patients who were admitted to our hospital with an acute abdomen and a history of surgical treatment for bladder cancer to determine the incidence of recurrent disease, the significance of the surgical history, the most sensitive diagnostic procedures, and the hospital course and prognosis after admission.

MATERIALS AND METHODS

The medical records at our institution codified by discharge diagnoses and medical or operative procedures

Accepted for publication August 10, 1996.
Address reprint requests to J.L. Phillips, M.D., Section of Urology, P.O. Box 3333, 333 Cedar Street, New Haven, CT 06510.

TABLE I. Previous Treatments for Bladder Cancer and Time Following Each Procedure Until Development of Abdominal Pain Requiring Admission

Treatment	n	Postoperative time to presentation with abdominal pain
Cystectomy	18	32.8 ± 10.3
TURBT[a]	4	57.6 ± 25.2
Ileal loop diversion	2	19.2 ± 16.5
Partial cystectomy	2	57.4 ± 56.8
Cystoscopy	3	9.3 ± 7.4
Total:	29	

[a]Transurethral resection of bladder tumor.

TABLE II. Signs and Symptoms at Presentation With Abdominal Pain and Their Chronicity

Sign or symptom	n	Duration in months
Abdominal pain	29/29	1.2 ± 0.3
Nausea/vomiting	15/29	0.3 ± 0.1
Constipation	14/29	1.1 ± 0.4
Perineal pressure	5/29	0.9 ± 0.1
Hematemesis	4/29	1.0 ± 0.0 (days)
Rectal bleeding	3/29	3.0 ± 1.6
Weight loss	2/29	1.5 ± 0.5
Jaundice	1/29	1.0
Vaginal discharge	1/29	1.0

were searched from 1980–1993 for patients who had undergone any diagnostic or therapeutic procedure on the gastrointestinal tract, lysis of adhesions, or creation of a stoma. A total of 4,763 patients were identified, and 163 patients were found to have had bladder cancer and satisfied one or more of the criteria described above. Hospital records were studied retrospectively. All symptoms, signs, laboratory tests, roentgenographic examinations, preliminary diagnoses, operations, therapeutic results, available pathologic data, and survival were analyzed.

RESULTS

Patient Data

Twenty-nine patients, 67.2 ± 9.8 years of age, were identified who had undergone surgical treatment for bladder cancer in the past and later presented with an acute abdomen. Previous treatments for bladder cancer are described in Table I and presenting symptoms and/or signs in Table II.

Laboratory and Clinical Tests

No historical data, physical examination, or laboratory abnormality could be identified that significantly differentiated recurrent bladder cancer as the cause of abdominal pain from nonrecurrent causes at presentation.

TABLE III. Diagnostic Imaging Studies Utilized for Evaluation of 29 Patients at Time of Presentation With Abdominal Pain

Study type	Total number
Abdominal roentgenography	17
Computed tomography	15
Contrast enema	10
Ultrasound, retroperitoneal	9
Upper gastrointestinal series	7
Sigmoidocolonoscopy	5
Cystoscopy	4
Intravenous pyelography	3
Esophagogastroduodenoscopy	2
Bone nuclear isotope uptake study	2
Vaginography	1

TABLE IV. Diagnostic Imaging Studies Utilized and Their Results: Determination of Obstruction and Intraoperative Confirmation

Test type	Diagnosis of obstruction % by imaging technique	%	Diagnosis of obstruction at laparotomy
X-ray	13 of 17	76	17
CT[a]	13 of 13	100	13
Enema	6 of 10	60	9
UGIS[a]	3 of 7	67	5

[a]Computed tomography.
[b]Upper gastrointestinal series.

TABLE V. Profile of Clinical Diagnoses of Abdominal Pain and Their Actual Causes

Diagnosis	n	Etiology	n
Obstruction	21	Metastatic bladder cancer	18
		Primary colon adenocarcinoma	1
		Peritoneal adhesions	1
		Internal hernia, ileal loop	1
Fistulae[a]	3	Metastatic bladder cancer	3
Hydronephrosis	2	Metastatic bladder cancer	2
Biliary obstruction	1	Metastatic bladder cancer	1
Abdominal pain	2	Radiation enteritis	1
		Colon cancer, recurrent	1
	29		29

[a]Vesicocutaneous fistulae.

Diagnostic Imaging Studies

The diagnostic tests employed are shown in Table III and their results in Table IV. Although pain and contrast roentgenography were sensitive in determining obstruction pre-operatively, they were limited in identifying recurrent bladder cancer.

Fifteen of the 29 patients underwent computed tomography (CT). Metastatic bladder cancer was identified in 13, although all 15 were found to have recurrent disease at laparotomy (sensitivity: 87%, $P < .05$).

Diagnoses

As shown in Table V, 21 of 29 patients (72.4%) presented with intestinal obstruction and 8 with nonobstructive etiologies for abdominal pain. Eighteen of the 21 with obstruction and 6 of the 8 without obstruction were diagnosed with recurrent bladder cancer. Twenty-four of 29 patients (82.8%), therefore, had recurrent bladder cancer.

Five of 29 patients (17.2%) did not have recurrent bladder cancer. Four patients had undergone cystectomy 11.8 ± 3.8 months previously and presented with radiation enteritis, primary colon cancer, an ileal loop internal hernia, and benign, intraperitoneal adhesions, respectively.

Chronicity of Complaints and Presence of Recurrent Disease

There was no significant ($P < .05$) difference in chronicity of complaints between patients with recurrent bladder cancer (n = 24) and patients whose symptoms were not due to recurrent bladder cancer (n = 5). There was no significant difference ($P < .05$) in time after surgical treatment to presentation between patients with recurrent disease after cystectomy (38.9 ± 12.9 months) and the group of patients with recurrent disease who had undergone other surgical treatments (18.9 ± 10.8 months).

The two cystectomy patients who had nonneoplastic etiologies for abdominal pain presented 14 and 19 months postoperatively with an internal hernia of an ileal loop and obstructive, intraperitoneal adhesions, respectively.

Pathology and Recurrences

Seventeen of 18 cystectomy patients had transitional cell carcinoma (TCC) of the bladder and one had adenocarcinoma. The number of patients at each pathologic stage was: pTa 1; pT1 4; pT2 3; pT3a 2; pT3b 8; pT4 0. Eight of 9 patients with extravesical disease and 5 of 7 without extravesical disease at cystectomy presented later with recurrent bladder cancer.

Of the 11 patients who had undergone other surgery for bladder cancer, only 5 had pathologic stages that could be documented: T11; T2 1; T3a 2; T3b 0; T4 1.

Survival

Regardless of treatment type, recurrent bladder cancer that had caused an acute abdomen reached a mortality of 100% by 7.1 ± 2.5 months after admission. The five patients who had an acute abdomen not due to bladder cancer were reportedly alive in 1993, 3.8 ± 1.7 years after presenting with an acute abdomen.

DISCUSSION

An early determination of the cause of an acute abdomen is vital for the formulation of an expedient and appropriate treatment plan. This tenet is especially important in the evaluation of abdominal pain in patients with a history of intraabdominal cancer. Such patients may have a higher incidence of obstruction caused by neoplastic recurrence than patients who are status postabdominal surgery for nononcologic reasons [5–7]. Patients with a history of bladder cancer, however, are unique in that the treatment of this extra-abdominal malignancy often requires a major intra-abdominal procedure. Of cystectomy patients, 10% later present with intestinal obstruction due to adhesions or failed urinary conduits [10]. It is not known, however, how frequently cystectomy patients present with recurrent bladder cancer causing abdominal pain that requires surgical intervention.

As 24 of 29 (83%) patients in this study were found to have recurrent bladder cancer at laparotomy, we feel that abdominal pain requiring admission in patients with a history of surgery for bladder cancer is highly suggestive of recurrent disease. Recurrence apparently was not related to previous surgical treatment for bladder cancer, chronicity of symptoms, or last known pathologic stage.

No single clinical or laboratory finding was helpful in differentiating malignant from benign causes for a patient's abdominal pain, and of the imaging studies, only CT consistently predicted recurrent bladder cancer preoperatively (sensitivity 76%, $P < .05$).

The size of the patient population (n = 29) analyzed makes comparative interpretations between subgroups difficult since the subgroups, i.e., cystectomy vs. noncystectomy, are small. Other important variables to be considered include patient self-selectivity to the medical institution in this study, unreported historical data, stage differences in patients selected for cystectomy versus bladder-sparing procedures, and differences in medical treatments received prior to admission, such as chemo-, radio-, or immunotherapy.

The two cystectomy patients who had nonneoplastic complications of their urinary diversions in our study group (one with an internal hernia of an ileal loop and the other with benign intraperitoneal adhesions) appeared to present sooner (16.5 ± 2.5 months, n = 2) after cystectomy than those who presented with recurrent cancer (38.9 ± 12.9 months, n = 14). Although statistically not significant, the difference may support empiric suspicions that late presentations with abdominal pain may likely carry a more malignant diagnosis than those with earlier presentations after cystectomy. Urinary conduit failure and urine leak in the early postoperative period has been reported, although no patient presented with that diagnosis during our study period [10].

Our survival data suggest that recurrent disease causing abdominal pain in patients with a history of bladder cancer has a high mortality and corroborate previous reports [11,12]. Correct diagnoses early in the hospital course identifying recurrent disease may improve patient out-

come and computed tomography appears helpful in the preoperative evaluation.

CONCLUSIONS

Recurrent bladder cancer was the etiology of abdominal pain in 78% of patients presenting with symptoms 38.9 ± 12.9 months after cystectomy and in 91% of patients 18.9 ± 10.8 months after other noncystectomy surgical procedures for bladder cancer. Abdominal pain requiring admission in patients with a history of surgery for bladder cancer is therefore highly suggestive of recurrent disease. Recurrent bladder cancer causing abdominal pain has a high 7-month mortality. No single clinical, laboratory, or radiologic finding was consistent in the identification of recurrent disease preoperatively other than computed tomography (CT).

REFERENCES

1. De Dombal FT, Matharu SS, Staniland JR, et al.: Presentation of cancer to hospital as 'acute abdominal pain.' Br J Surg 67:413–416, 1980.
2. Fenyö G: Acute abdominal disease in the elderly: Experience from two series in Stockholm. Amer J Surgery 143:751–754, 1982.
3. Blake R, Lynn J: Emergency abdominal surgery in the aged. Br J Surg 63:956–960, 1976.
4. Telfer S, Fenyö G, Holt PR, De Dombal FT: Acute abdominal pain in patients over 50 years of age. Scand J Gastroent (supp.) 144:47–50, 1988.
5. Sannella NA: Early and late obstruction of the small bowel after abdominoperineal resection. Am J Surg 130:270–272, 1975.
6. Fromm DG: Ileus and obstruction. In Greenfield LJ, Mulholland MW, Oldham KT, Zeleneck GB (eds): "Surgery: Scientific Principles and Practice." Philadelphia: JB Lippincott, 1993, p 731–740.
7. Salem RR, Ravikumar TS: Surgery in nonsolid tumors. In Ritchie WP Jr, Steele G Jr, Dean RH (eds): "General Surgery." Philadelphia: JB Lippincott, 1995, p 815–828.
8. Catalona WJ: Urothelial tumors of the urinary tract. In Walsh PJ, Retik AB, Stamey TA, Vaughn ED Jr. (eds): "Campbell's Urology." Philadelphia: WB Saunders, 1992, p 1094–1158.
9. Laws HL, Aldrete JS: Small-bowel obstruction: A review of 465 cases. S Med J 1976; 69:733–734.
10. Skinner DG, Crawford ED, Kaufman JJ: Complications of radical cystectomy for carcinoma of the bladder. J Urol 123:640–643, 1980.
11. Thompson RA Jr, Campbell EW Jr, Kramer HC, et al.: Late invasive recurrence despite long-term surveillance for superficial bladder cancer. J Urol 149:1010–1011, 1993.
12. Kalish LA, Garnick NB, Richie JP: Appropriate endpoints for superficial bladder cancer clinical trials. J Clin Oncol 5:2004–2008, 1987.